most of the leaf activity to be associated with a single component (R_F 0.12), which probably possessed more polar groups than mevalonic acid (R_F 0.72).

The remainder of the plant, namely, the main stem and side-shoots, was reduced to a fine pulp, and extracted successively with water, ethanol, acetone, ether, and benzene. About 30 per cent of the applied activity was recovered in the aqueous extract, and 20 per cent in the ethanol extract. All other extracts and residues were inactive.

The component with R_F value 0.12 appeared in both aqueous and ethanolic solutions, the latter also containing an active substance (R_F 0.93) which was probably a carboxylic acid.

It may be concluded that, under the conditions of these experiments, mevalonic acid was not incorporated into rubber in *Hevea*, and that it was converted in the stem to products unable to enter the pathway of carotene synthesis which can operate with high efficiency in the leaves.

Fuller details of this work will be published elsewhere at a later date.

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G. B. BARLOW
A. D. PATRICK

Dunlop Research Centre,
Erdington,
Birmingham 24.
July 3.

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Action of Testosterone Propionate and 4-Chlorotestosterone Acetate on Protein Synthesis *in vitro*

THE protein anabolic activity of testosterone propionate is well established¹. It has been shown that an increase in the rate of uptake of labelled glycine occurs in slices of kidney from mice treated with this substance². Incorporation of labelled glycine into liver proteins does not seem to be affected.

As the action of testosterone propionate on protein synthesis might depend on the condition of the tissue, we have studied the incorporation of glycine-1-¹⁴C into slices of resting and regenerating livers from animals treated with testosterone propionate.

The effects of a new compound, 4-chlorotestosterone acetate, recently synthesized by Camerino, Patelli and Vercellone³, have also been studied. This substance possesses powerful myotrophic and weak androgenic activity, as measured by increase in weight of levator ani muscle and ventral prostate gland, respectively⁴. Having greater anabolic and lesser androgenic effects than testosterone propionate similarly administered, it may have considerable therapeutic value as an anabolic agent.

Castrated male rats, weighing 200–250 gm., were used throughout our experiments. They were treated

subcutaneously with 2 mgm. of testosterone propionate or 4-chlorotestosterone acetate once a day for three days. The first injection was done 2 hr. after partial hepatectomy in the case of the animals with regenerating liver. At the end of the treatment (72 hr. from the start, 74 hr. from hepatectomy) the rats were killed by decapitation, the livers quickly removed and sliced by hand with a razor. The slices were then placed into the main chamber of a Warburg flask containing 3.0 ml. of phosphate-saline⁵. After 10 min. equilibration, the labelling reaction was started by transferring 2 μ c. (3.4 μ moles) of glycine-1-¹⁴C in a volume of 0.4 ml. from the side-arm into the main chamber of the flask: this was within 30 min. of the death of the animal. The labelling reaction lasted 1 hr.; the experimental conditions and counting techniques were the same as described by Bernelli-Zazzera and Guidotti⁵.

The results are shown in Table 1.

Table 1. INCORPORATION OF GLYCINE-1-¹⁴C INTO THE PROTEINS OF SLICES OF RESTING OR REGENERATING LIVERS FROM ANIMALS TREATED WITH TESTOSTERONE PROPIONATE OR 4-CHLOROTESTOSTERONE ACETATE
Counts/min./mgm. of protein. Means of five experiments $\pm$ S.E.

	Resting	Regenerating
Controls	165.3 $\pm$ 14.0	257.8 $\pm$ 40.2
Testosterone propionate treated	152.9 $\pm$ 10.8	326.0 $\pm$ 36.1
4-Chlorotestosterone acetate treated	165.1 $\pm$ 21.6	409.6 $\pm$ 47.9

Sum of squares between experiments, within conditions = 73,274.75 (8 d.f.).

The Bartlett test is not significant. Therefore we made an analysis of variance, considering that three rats (control and one treated with each drug) were used throughout one experiment. It was possible to conclude that: (1) slices of regenerating livers incorporate glycine at a rate significantly higher than that of resting livers ($P < 0.01$). (2) Slices from rats treated with testosterone propionate or 4-chlorotestosterone acetate incorporate glycine at a rate significantly higher than untreated controls ($P < 0.05$). (3) There is no difference between the effects of the two treatments ($P > 0.05$). (4) The effects of the treatments largely depend on the state of the tissue ($P < 0.05$); this can be seen from Table 1, where the treatments are effective in enhancing glycine incorporation into liver proteins only in the case of regenerating livers, when the restoration of cell structures takes place and the rate of protein synthesis reaches its maximum. Therefore, the hypothesis that testosterone propionate and 4-chlorotestosterone acetate are mainly active on the synthesis of cell proteins is not inconsistent with our results.

A. BERNELLI-ZAZZERA
M. BASSI
R. COMOLLI
P. LUCCHELLI

Istituto di Patologia Generale,
Istituto di Clinica Medica,
University of Milan.
June 19.

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